comprises a structural supermotif associated with peptide binding to multiple HLA molecules, said structural supermotif comprising a first amino acid anchor residue at a position two from the epitope's amino-terminal amino acid residue, said first anchor residue consisting of P, and a second amino acid anchor residue selected from the group consisting of V, I, L, F, M, W, Y, and A as the epitope's carboxyl-terminal amino acid residue;

wherein the immunogenic peptide induces a cytotoxic T cell response when in complex with an HLA molecule and is contacted with an HLA-restricted cytotoxic T cell.

9. The nucleic acid of claim 8, wherein the immunogenic peptide, which comprises an epitope bearing a structural supermotif, is more than about 11 amino acid residues in length.

10. The nucleic acid of claim 9, wherein the immunogenic peptide, which comprises an epitope bearing a structural supermotif, is about 8, 9, 10, or 11 amino acid residues in length.

11. The nucleic acid of claim 8, wherein the nucleic acid encodes a homopolymer comprising at least one additional peptide, wherein the additional peptide has the same sequence as the immunogenic peptide.

12. The nucleic acid of claim 8, wherein the nucleic acid encodes a heteropolymer encoding at least one additional peptide.

13. The nucleic acid of claim 12, wherein the additional peptide comprises a T helper epitope.

14. The nucleic acid of claim 12, wherein the additional peptide comprises a CTL epitope.

15. The nucleic acid of claim 12, wherein the additional peptide is non-naturally occurring.

16. The nucleic acid of claim 8, wherein the immunogenic peptide is non-naturally occurring.

17. The nucleic acid of claim 8, wherein the HLA molecule is selected from the group consisting of: HLA-B1801, HLA-B0801, HLA-B2705, HLA-B4403, HLA-B3502, HLA-B4001, HLA-B1302, HLA-B0701, HLA-B1401, HLA-B3501, HLA-B3503, HLA-B5101, HLA-B5301, HLA-B5401 and HLA-Cw6 molecules.

18. The nucleic acid of claim 8, wherein the immunogenic peptide is derived from a cancer-associated antigen.

19. The nucleic acid of claim 18, wherein the immunogenic peptide is derived from a HER2/neu antigen, a p53 antigen, a MAGE antigen, a CEA antigen, or a prostate antigen.

20. The nucleic acid of claim 8, wherein the immunogenic peptide is derived from an antigen that is derived from a pathogenic agent.

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21. The nucleic acid of claim 20, wherein the immunogenic peptide is derived from an HIV antigen, an HBV antigen, an HCV antigen, an HPV antigen, or a malaria antigen.

22. The nucleic acid of claim 8, wherein the immunogenic peptide is immunogenic *in vitro* and/or *in vivo*.

23. The nucleic acid of claim 8, wherein the immunogenic peptide, or a structural supermotif-comprising fragment thereof, comprises an IC_{50} of less than about 500 nM for an HLA molecule.

24. The nucleic acid of claim 23, wherein the immunogenic peptide, or a structural supermotif-comprising fragment thereof, comprises an IC_{50} of less than about 50 nM for an HLA molecule.

25. The nucleic acid of claim 8, wherein the nucleic acid encodes the immunogenic peptide linked to a carrier peptide.

26. The nucleic acid of claim 8, wherein the immunogenic peptide is selected from the peptides of Tables 5, 6, or 7, and the immunogenic peptide has an IC_{50} of less than about 500 nM for an HLA molecule.

27. The nucleic acid of claim 8, wherein the nucleic acid comprises a viral vector.

28. An isolated nucleic acid molecule comprising:

a nucleic acid encoding a non-naturally occurring immunogenic peptide, said immunogenic peptide comprising an epitope consisting of about 8-11 residues which comprises a structural supermotif associated with peptide binding to multiple HLA molecules, said structural supermotif comprising a first amino acid anchor residue at a position two from the epitope's amino-terminal amino acid residue, said first anchor residue consisting of P, and a second amino acid anchor residue selected from the group consisting of V, I, L, F, M, W, Y, and A as the epitope's carboxyl-terminal amino acid residue;

wherein the immunogenic peptide induces a cytotoxic T cell response when in complex with an HLA molecule and is contacted with an HLA-restricted cytotoxic T cell.

29. The nucleic acid of claim 28, wherein the immunogenic peptide, which comprises an epitope bearing a structural supermotif, is more than about 11 amino acid residues in length.

30. The nucleic acid of claim 29, wherein the immunogenic peptide, which comprises an epitope bearing a structural supermotif, is about 8, 9, 10, or 11 amino acid residues in length.

31. The nucleic acid of claim 28, wherein the nucleic acid encodes a homopolymer comprising at least one additional peptide, wherein the additional peptide has the same sequence as the immunogenic peptide.

32. The nucleic acid of claim 28, wherein the nucleic acid encodes a heteropolymer encoding at least one additional peptide.

33. The nucleic acid of claim 32, wherein the additional peptide comprises a T helper epitope.

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34. The nucleic acid of claim 32, wherein the additional peptide comprises a CTL epitope.

35. The nucleic acid of claim 32, wherein the additional peptide is non-naturally occurring.

36. The nucleic acid of claim 28, wherein the HLA molecule is selected from the group consisting of: HLA-B1801, HLA-B0801, HLA-B2705, HLA-B4403, HLA-B3502, HLA-B4001, HLA-B1302, HLA-B0701, HLA-B1401, HLA-B3501, HLA-B3503, HLA-B5101, HLA-B5301, HLA-B5401 and HLA-Cw6 molecules.

37. The nucleic acid of claim 28, wherein the immunogenic peptide is derived from a cancer-associated antigen.

38. The nucleic acid of claim 37, wherein the immunogenic peptide is derived from a HER2/neu antigen, a p53 antigen, a MAGE antigen, a CEA antigen, or a prostate antigen.

39. The nucleic acid of claim 28, wherein the immunogenic peptide is derived from an antigen that is derived from a pathogenic agent.

40. The nucleic acid of claim 39, wherein the immunogenic peptide is derived from an HIV antigen, an HBV antigen, an HCV antigen, an HPV antigen, or a malaria antigen.

41. The nucleic acid of claim 28, wherein the immunogenic peptide is immunogenic *in vitro* and/or *in vivo*.

42. The nucleic acid of claim 28, wherein the immunogenic peptide, or a structural supermotif-comprising fragment thereof, comprises an IC_{50} of less than about 500 nM for an HLA molecule.

a' cont

43. The nucleic acid of claim 42, wherein the immunogenic peptide, or a structural supermotif-comprising fragment thereof, comprises an IC_{50} of less than about 50 nM for an HLA molecule.

44. The nucleic acid of claim 28, wherein the nucleic acid encodes the immunogenic peptide linked to a carrier peptide.

45. The nucleic acid of claim 28, wherein the immunogenic peptide is selected from the peptides of Tables 5, 6, or 7, and the immunogenic peptide has an IC_{50} of less than about 500 nM for an HLA molecule.

46. The nucleic acid of claim 28, wherein the nucleic acid comprises a viral vector.

47. An isolated nucleic acid molecule encoding a homopolymer or a heteropolymer, said nucleic acid molecule comprising:

a nucleic acid encoding an immunogenic peptide, said immunogenic peptide comprising an epitope consisting of about 8-11 residues which comprises a structural supermotif associated with peptide binding to multiple HLA molecules, said structural supermotif comprising a first amino acid anchor residue at a position two from the epitope's amino-terminal amino acid residue, said first anchor residue consisting of P, and a second amino acid anchor residue selected from the group consisting of V, I, L, F, M, W, Y, and A as the epitope's carboxyl-terminal amino acid residue;

wherein the immunogenic peptide induces a cytotoxic T cell response when in complex with an HLA molecule and is contacted with an HLA-restricted cytotoxic T cell; and

wherein the nucleic acid further encodes at least one additional peptide.

48. The nucleic acid of claim 47, wherein the immunogenic peptide, which comprises an epitope bearing a structural supermotif, is more than about 11 amino acid residues in length.

49. The nucleic acid of claim 48, wherein the immunogenic peptide, which comprises an epitope bearing a structural supermotif, is about 8, 9, 10, or 11 amino acid residues in length.

50. The nucleic acid of claim 47, wherein the nucleic acid encodes a homopolymer and the additional peptide has the same sequence as the immunogenic peptide.

51. The nucleic acid of claim 47, wherein the nucleic acid encodes a heteropolymer and the additional peptide comprises a T helper epitope.

52. The nucleic acid of claim 51, wherein the additional peptide comprises a CTL epitope.

53. The nucleic acid of claim 51, wherein the additional peptide is non-naturally occurring.

54. The nucleic acid of claim 47, wherein the immunogenic peptide is non-naturally occurring.

55. The nucleic acid of claim 47, wherein the HLA molecule is selected from the group consisting of: HLA-B1801, HLA-B0801, HLA-B2705, HLA-B4403, HLA-B3502, HLA-B4001, HLA-B1302, HLA-B0701, HLA-B1401, HLA-B3501, HLA-B3503, HLA-B5101, HLA-B5301, HLA-B5401 and HLA-Cw6 molecules.

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56. The nucleic acid of claim 47, wherein the immunogenic peptide is derived from a cancer-associated antigen.

57. The nucleic acid of claim 56, wherein the immunogenic peptide is derived from a HER2/neu antigen, a p53 antigen, a MAGE antigen, a CEA antigen, or a prostate antigen.

58. The nucleic acid of claim 47, wherein the immunogenic peptide is derived from an antigen that is derived from a pathogenic agent.

59. The nucleic acid of claim 58, wherein the immunogenic peptide is derived from an HIV antigen, an HBV antigen, an HCV antigen, an HPV antigen, or a malaria antigen.

60. The nucleic acid of claim 47, wherein the immunogenic peptide is immunogenic *in vitro* and/or *in vivo*.

61. The nucleic acid of claim 47, wherein the immunogenic peptide, or a structural supermotif-comprising fragment thereof, comprises an IC_{50} of less than about 500 nM for an HLA molecule.

62. The nucleic acid of claim 61, wherein the immunogenic peptide, or a structural supermotif-comprising fragment thereof, comprises an IC_{50} of less than about 50 nM for an HLA molecule.

63. The nucleic acid of claim 47, wherein the nucleic acid encodes the immunogenic peptide linked to a carrier peptide.

64. The nucleic acid of claim 47, wherein the immunogenic peptide is selected from the peptides of Tables 5, 6, or 7, and the immunogenic peptide has an IC_{50} of less than about 500 nM for an HLA molecule.

a' cont

65. The nucleic acid of claim 47, wherein the nucleic acid comprises a viral vector.

66. An pharmaceutical composition comprising an isolated nucleic acid molecule that encodes an immunogenic polypeptide, said composition comprising:

a therapeutically effective human dose of a nucleic acid encoding an immunogenic peptide, said immunogenic peptide comprising an epitope consisting of about 8-11 residues which comprises a structural supermotif associated with peptide binding to

multiple HLA molecules, said structural supermotif comprising a first amino acid anchor residue at a position two from the epitope's amino-terminal amino acid residue, said first anchor residue consisting of P, and a second amino acid anchor residue selected from the group consisting of V, I, L, F, M, W, Y, and A as the epitope's carboxyl-terminal amino acid residue;

with a *proviso* that the immunogenic peptide does not comprise an entire native antigen;

wherein the immunogenic peptide induces a cytotoxic T cell response when in complex with an HLA molecule and is contacted with an HLA-restricted cytotoxic T cell;

and a pharmaceutically acceptable excipient.

67. The nucleic acid of claim 66, wherein the immunogenic peptide, or a structural supermotif-comprising fragment thereof, comprises an IC_{50} of less than about 500 nM for an HLA molecule.

68. The nucleic acid of claim 67, wherein the immunogenic peptide, or a structural supermotif-comprising fragment thereof, comprises an IC_{50} of less than about 50 nM for an HLA molecule.

69. The composition of claim 66, further comprising a human dose of the pharmaceutically acceptable excipient.

70. An isolated nucleic acid molecule comprising:

a nucleic acid encoding an immunogenic peptide, said immunogenic peptide comprising an epitope consisting of about 8-11 residues which comprises a structural supermotif associated with peptide binding to multiple HLA molecules, said structural supermotif comprising a first amino acid anchor residue at a position two from the epitope's amino-terminal amino acid residue, said first anchor residue consisting of P, and a second amino acid anchor residue selected from the group consisting of V, I, L, F, M, W, Y, and A as the epitope's carboxyl-terminal amino acid residue;